

What is claimed is:

1. An isolated PSCA protein having an amino acid sequence that is encoded by a nucleic acid molecule that hybridizes, under stringent conditions, to a nucleic acid molecule encoding the sequence shown in Figure 1B or 2.
2. The isolated PSCA protein of claim 1 having the amino acid sequence of Human PSCA as shown in Figure 1B.
3. The isolated PSCA protein of claim 1 having the amino acid sequence shown in Figure 2.
4. A peptide fragment of the protein of claim 1.
5. The peptide fragment of claim 4 having the amino acid sequence TARIRAVGLLTVISK.
6. The peptide fragment of claim 4 having the amino acid sequence VDDSQDYVVGKK.
7. An antibody, or antibody fragment containing an antigen binding site, wherein the antigen binding site binds and recognizes the protein of claim 1.
8. The antibody of claim 7, wherein the antigen binding site is TARIRAVGLLTVISK.
9. The antibody of claim 7, wherein the antigen binding site is VDDSQDYVVGKK.
10. The antibody of claim 7 which is a monoclonal antibody.
11. The antibody of claim 7 which is a polyclonal antibody.
12. The antibody of claim 7 which is a chimeric antibody having a murine antigen-binding site and a humanized region that regulates effector function.
13. An immunoconjugate comprising a molecule containing the antigen-binding region of the antibody or antibody fragment of claim 7 joined to a therapeutic agent.
14. The immunoconjugate of claim 13, wherein the therapeutic agent is a cytotoxic agent.

15. The immunoconjugate of claim 13, wherein the cytotoxic agent is selected from a group consisting of ricin, doxorubicin, daunorubicin, taxol, ethiduium bromide, mitomycin, etoposide, tenoposide, vincristine, vinblastine, colchicine, dihydroxy anthracin dione, actinomycin D, diphteria toxin, *Pseudomonas* exotoxin (PE) A, PE40, ricin, abrin, glucocorticoid and radioisotopes.
16. The immunoconjugate of claim 13, wherein the antibody fragments are selected from the group consisting of Fv, F(ab') and F(ab')₂ fragments.
17. A nucleic acid molecule encoding the protein of claim 1 or 4.
18. The cDNA of claim 17.
19. A vector which comprises the nucleic acid molecule of claim 17.
20. A host vector system comprising a vector of claim 19 in a suitable host cell.
21. The host vector system of claim 20, wherein the suitable host cell is a bacterial cell.
22. The host vector system of claim 20, wherein the suitable host cell is an eukaryotic cell.
23. A method for producing a PSCA protein comprising culturing the host vector system of claim 20 under suitable culture conditions so as to produce the PSCA protein in the host and recovering the PSCA protein so produced.
24. A PSCA protein produced by the method of claim 23.
25. A method for detecting the presence of a PSCA protein in a sample comprising contacting the sample with the antibody of claim 7 and detecting the binding of the antibody with the PSCA protein in the sample.
26. The method of claim 25, wherein the detecting comprises:
- a. contacting the sample with the antibody capable of forming a complex with the PSCA protein in the sample; and
 - b. determining whether any complex is so formed.

27. A method for detecting the presence of a nucleic acid encoding a PSCA protein in a tissue sample comprising contacting the sample with the nucleic acid of claim 17 and detecting the binding of the nucleic acid of claim 17 to a constituent in the sample thereby forming a complex, the complex being indicative of the nucleic acid encoding the PSCA protein in the sample.
28. The method of claim 27, wherein the constituent is a PSCA RNA.
29. The method of claim 25, wherein the sample is a tissue or biological fluid.
30. The method of claim 29, wherein the sample is the tissue is bone, bone marrow, or prostate tissue.
31. The method of claim 29, wherein the biological fluid is urine or blood sera.
32. The method of claim 25, wherein the antibody is labeled so as to directly or indirectly produce a detectable signal with a compound selected from the group consisting of a radiolabel, an enzyme, a chromophore and a fluorescer.
33. The method of claim 27, wherein the nucleic acid is labeled so as to directly or indirectly produce a detectable signal with a compound selected from the group consisting of a radiolabel, an enzyme, a chromophore and a fluorescer.
34. A method for diagnosing in a subject a cancer associated with the presence of the PSCA protein which comprises quantitatively determining in a cell sample from the subject the number of cells associated with the PSCA protein using the antibody of claim 7 and comparing the number of cells so determined to the amount in a sample from a normal subject, the presence of a measurable different amount indicating the presence of the cancer.
35. A method for diagnosing in a subject a cancer associated with the presence of the PSCA protein which comprises quantitatively determining in a sample from the subject the amount of RNA encoding the PSCA protein using the nucleic acid of claim 17 and comparing the amount of RNA so determined to the amount in a sample from a normal subject, the presence of a measurable different amount indicating the presence of the cancer.

36. A method for monitoring the course of prostate cancer in a subject which comprises quantitatively determining in a first sample from the subject the presence of a PSCA protein and comparing the amount so determined with the amount present in a second sample from the subject, such samples being taken at different points in time, a difference in the amounts determined being indicative of the course of prostate cancer.

37. A method for monitoring the course of prostate cancer in a subject which comprises quantitatively determining in a first sample from the subject the presence of a PSCA RNA and comparing the amount so determined with the amount present in a second sample from the subject, such samples being taken at different points in time, a difference in the amounts determined being indicative of the course of prostate cancer.

38. A method for diagnosing in a subject prostate cancer associated with a PSCA protein comprising:

- obtaining from the subject a sample; and
- quantitatively determining the concentration in the sample of the PSCA protein, the presence of the protein in the sample indicating that the subject has prostate cancer.

39. A method for diagnosing in a subject prostate cancer associated with a PSCA RNA comprising:

- obtaining from the subject a sample; and
- quantitatively determining the concentration in the sample of the PSCA RNA, the presence of RNA in the sample indicating that the subject has prostate cancer.

40. The method of claim 38 or 39, wherein the sample is a tissue or biological fluid.

41. The method of claim 40, wherein the tissue is bone, bone marrow, or prostate tissue.

42. The method of claim 40, wherein the biological fluid is urine or blood sera.

43. A method for selectively killing a cell expressing PSCA antigen comprising reacting the immunoconjugate of claim 13 with the cell so that the therapeutic agent of the immunoconjugate can kill the cell.